REMARKS/ARGUMENTS

The above identified patent application has been amended and reconsideration is hereby requested. Claims 1-20 are currently in the application. Claim 1, 4, 6 and 9 have been amended. Claim 3 has been cancelled without prejudice. No new claims have been added.

The Examiner has rejected Claims 1-10 under 35 U.S.C. §102(b) as being anticipated by Kim et al. (Pat. No. 5,508,752) ("Kim").

However, Claim 1 now calls in part for "determining a scaling factor (k) corresponding to the hard decision point compris[ing] selecting a first constellation point corresponding to the hard decision point; determining a second constellation point corresponding to a nearest constellation point having the designated received bit; and assigning a scaling factor value dependent on the number of constellation points between the first constellation point and the second constellation point". (emphasis added).

Kim, on the other hand does not provide for any of the first or second constellation points, nor any constellation points in between. The Examiner states on page 2 of the Office Action that the scaling factor of Claim 1 is equivalent to the distance mapper 61 shown in Fig. 11 of Kim. However, as disclosed in Column 8, lines 18-30, the Euclidean distances d_0 - d_3 of Kim represent distance between an input signal and the closest point among (0, 8, -8), (2, 10, -16, -14), etc. Neither the input signal of Kim nor the groups of values (0, 8, -8), (2,

10, -16, -14), etc. are disclosed as constellation points of the type that could comprise an array in a symbol space. Rather, these groups of values appear to represent the quantization of the input signal magnitude into discrete voltages as shown in Figs. 7 and 8, and because neither a first nor second constellation point is disclosed in Kim, a scaling factor value dependent on the number of constellation points between the first constellation point and the second constellation point cannot therefore be assigned as called for in Claim 1. The values that are assigned to the Euclidean distances d_0 - d_3 represent the difference in magnitude between the input signal and certain pre-determined signal levels rather than a number of constellation points between the first constellation point and the second constellation point, as called for in the claim.

The Euclidean distances d_0 - d_3 may not provide the first, second or any intermediate constellation points as called for in Claim 1, but they do serve a purpose in Kim. As disclosed in Column 8, lines 30-31, "The thus obtained [Euclidean distances] output by the distance mapper 39a are input to the Viterbi decoder 39b for decoding." Kim further discloses in column 10 at line 53 that,

> "As shown in FIG. 12, the Viterbi decoder 62 includes a matrix calculator 63 for obtaining the difference between the Euclidean distances d.sub.0, d.sub.1, d.sub.2 and d.sub.3 and the branches of the respective states and then calculating the survival path and the accumulative matrix value by adding the current difference value with the accumulative previous distance values, an optimal path calculator 64 for obtaining the optimal path within the view area from the accumulative matrix value output by the matrix calculator 63, a path history calculator 65 for directly outputting the upper one bit value using hard decision values h.sub.1 to h.sub.7 output by the hard decider 60, the survival path output by the matrix calculator 63 and the optimal path output by the optimal path calculator 64 and for

> outputting a signal for selecting the lower one bit, and a look-up table 66 for outputting the lower one bit depending on the selection signal output by the path history calculator 65. The Viterbi decoder 62 Viterbi decodes the data output by the distance mapper 61 and hard decider 60."

The Euclidean distances are supplied to the Viterbi decoder to provide the "accumulative previous distance values" called for in Kim, and may be an essential part of the Viterbi decoding process itself, however the Euclidean distances d_0 - d_3 cannot be said to stand for the constellation points called for in Claim 1. Accordingly, because Kim does not provide for the first, second, or any other constellation points as called for in Claim 1, Applicant submits that the claim is not anticipated by Kim under 35 U.S.C. §102(b). Claims 2 and 4-8 are dependent on Claim 1. As such, Claims 2 and 4-8 are believed allowable based upon Claim 1 and for the additional limitations contained therein.

Applicant submits that Claim 9 is also not anticipated by Kim under 35 U.S.C. §102(b) for the reasons described above, namely that Claim 9 calls for, "determining a scaling factor (k) corresponding to the hard decision point compris[ing] selecting a first constellation point corresponding to the hard decision point; determining a second constellation point corresponding to a nearest constellation point having the designated received bit; and assigning a scaling factor value dependent on the number of constellation points between the first constellation point and the second constellation point", and Applicant submits that Kim does not provide for the first, second, or any other constellation points as called for in Claim 9. Accordingly, the

Applicant submits that Claim 9 is also not anticipated by Kim under 35 U.S.C. §102(b).

The Examiner has rejected Claim 11 under 35 U.S.C. §102(e) as being anticipated by Hart (Pat. No. 6,792,055) ("Hart"). However, Claim 11 calls in part for "quantizing the received signal to a point in a signal constellation plane, to provide a quantized point; making a hard decision as to which constellation point the quantized point represents; [and] determining scaling factors (k's) associated with each constellation point". (emphasis added).

Hart does not disclose the signal constellation plane nor the constellation point called for in Claim 11. The Examiner states on pages 4 and 5 of the Office Action that Hart discloses "quantizing the received signal to a point in a signal constellation plane, to provide a quantized point" in columns 5, 6 and 7. However column 6, lines 23-29 disclose an n-bit quantization function 131 having quantized soft-decision bits, and that the embodiment of Fig. 4 utilizes three bits but other numbers of bits may be used. However, these bits do not comprise constellation points of the type that could comprise an array in a symbol space, nor is a signal constellation plane disclosed.

Accordingly, because Hart does not provide either the signal constellation plane and constellation point called for in Claim 11, Applicant submits that the claim is not anticipated by Hart under 35 U.S.C. §102(e). Claims 12-17 are dependent on Claim 11. As such, Claims 12-17 are believed allowable based

upon Claim 11 and for the additional limitations contained therein.

The Examiner has rejected Claim 18 under 35 U.S.C. §103(a) as being unpatentable over Hart in view of Kim.

However, Claim 18 calls in part for "a quantizer that... quantizes the input to a point in a signal constellation plane, to provide a quantized point; a hard decision unit that accepts the quantized point and determines a constellation point that the quantized point represents; [and] a scaling factor unit that determines scaling factors associated with the constellation point". (emphasis added). For reasons similar to those discussed above, namely that neither Hart nor Kim disclose the signal constellation plane nor the constellation point called for in Claim 18, Applicant respectfully submits that Claim 18 is not unpatentable over Hart in view of Kim. Claims 19 and 20 are dependent on Claim 18. As such, Claims 19 and 20 are believed allowable based upon Claim 18 and for the additional limitations contained therein.

In view of the above, it is submitted that the claims are patentably distinct over the cited references, and that all the rejections to the claims have been overcome. Accordingly, Applicant respectfully requests a timely indication of allowance. Should there be any further issues that can be addressed by telephone, Applicant invites the Examiner to contact the undersigned at the number indicated below.

Respectfully submitted,

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